CE205 Data Structures Week-10

Sorting Algorithms, Taxonomy and Comparisons

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Download PDF[1],DOCX[2], SLIDE[3], PPTX[4]

2.0.2 Outline

- Trees
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    - Search and Insertion
    - Delete
    - BST over Hash Table
    - Construction and Conversions
    - Check Smallest/Largest Element
- Trees
  - Red Black Tree and Threaded Binary Tree
  - AVL Trees
  - B Trees
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  - Splay Tree Datastructure
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    - How to augment a data structure
- Trees
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  - van Emde Boas Trees
    - Preliminary approaches
    - A recursive structure
    - The van Emde Boas tree
  - Binomial Trees
  - Comparison of Search Trees
  - Minimax Tree

2.0.3 Binary Search Tree

- http://www.btechsmartclass.com/data_structures/binary-search-tree.html
- https://visualgo.net/en/bst?slide=1 (Select BINARY SEARCH TREE)

[1] pandoc_ce205-week-10-advanced-tree-structures.en_doc.pdf
[2] pandoc_ce205-week-10-advanced-tree-structures.en_word.docx
[3] ce205-week-10-advanced-tree-structures.en_slide.pdf
[4] ce205-week-10-advanced-tree-structures.en_slide.pptx

- https://www.cs.usfca.edu/~galles/visualization/BST.html
- Search and Insertion
- Delete

2.0.4 BST over Hash Table

- https://www.geeksforgeeks.org/advantages-of-bst-over-hash-table/?ref=lbp
- Construction and Conversions
- Check Smallest/Largest Element

2.0.5 Red Black Tree and Threaded Binary Tree

- https://www.geeksforgeeks.org/threaded-binary-tree/

2.0.6 AVL Trees

- http://www.btechsmartclass.com/data_structures/avl-trees.html
- https://visualgo.net/en/bst (Select AVL)
- https://www.cs.usfca.edu/~galles/visualization/AVLtree.html

2.0.7 B Trees

- http://www.btechsmartclass.com/data_structures/b-trees.html
- https://www.cs.usfca.edu/~galles/visualization/BTree.html

2.0.8 Defitinion of B Trees

- https://www.geeksforgeeks.org/introduction-of-b-tree-2/

2.0.8.1 Basic operations on B tree

- https://www.geeksforgeeks.org/insert-operation-in-b-tree/
- https://www.guru99.com/b-tree-example.html

2.0.8.2 Deleting a key from a B tree

- https://www.geeksforgeeks.org/delete-operation-in-b-tree/

2.0.9 2 3 4 Trees

- https://en.wikipedia.org/wiki/2%E2%80%933%E2%80%934_tree

2.0.10 2 3 Trees

- https://en.wikipedia.org/wiki/2%E2%80%933_tree

2.0.11 B+ Trees

- https://www.geeksforgeeks.org/introduction-of-b-tree/
- https://www.cs.usfca.edu/~galles/visualization/BPlusTree.html
- https://www.geeksforgeeks.org/difference-between-b-tree-and-b-tree/?ref=rp

2.0.12 R Trees

- https://www.geeksforgeeks.org/introduction-to-r-tree/?ref=rp

2.0.13 Red - Black Tree Datastructure

- http://www.btechsmartclass.com/data_structures/red-black-trees.html
- https://www.geeksforgeeks.org/red-black-tree-set-1-introduction-2/?ref=rp
- https://www.geeksforgeeks.org/red-black-tree-set-2-insert/
- https://www.geeksforgeeks.org/red-black-tree-set-3-delete-2/

2.0.14 Splay Tree Datastructure

- http://www.btechsmartclass.com/data_structures/splay-trees.html
- https://www.geeksforgeeks.org/splay-tree-set-1-insert/?ref=rp
- https://www.geeksforgeeks.org/splay-tree-set-2-insert-delete/
- https://www.geeksforgeeks.org/splay-tree-set-3-delete/?ref=rp

2.0.15 Augmenting Data Structures

- http://cs.bilkent.edu.tr/~ugur/teaching/cs502/material/cs502_2_ADS.pdf
- https://iq.opengenus.org/augmented-data-structures/
- http://staff.ustc.edu.cn/~csli/graduate/algorithms/book6/chap15.htm
- http://www.facweb.iitkgp.ac.in/~sourav/Lecture-11.pdf

2.0.16 Dynamic order statistics

- http://www.facweb.iitkgp.ac.in/~sourav/Lecture-11.pdf

2.0.17 How to augment a data structure

- http://www.facweb.iitkgp.ac.in/~sourav/Lecture-11.pdf

2.0.18 Interval trees

- https://www.geeksforgeeks.org/interval-tree/

2.0.19 van Emde Boas Trees

- https://www.geeksforgeeks.org/van-emde-boas-tree-set-1-basics-and-construction/
- https://web.stanford.edu/class/archive/cs/cs166/cs166.1146/lectures/14/Small14.pdf
- Preliminary approaches
- A recursive structure

2.0.20 Binomial Trees

- https://www.geeksforgeeks.org/binomial-heap-2/#:~:text=What%20is%20a%20Binomial%20Tree,as%20leftmost%20cl

2.0.21 Comparison of Search Trees

- http://www.btechsmartclass.com/data_structures/comparison-of-search-trees.html

2.0.22 Minimax Tree

- https://www.geeksforgeeks.org/minimax-algorithm-in-game-theory-set-1-introduction/

$$End - Of - Week - 10$$